

**Quadratic relations between start points of semi straight lines  $n = a + b \cdot m$**

In the figure before coordinates of start points are (**start.n**, **start.m**), and the numbers that appear above and below the points are **b** and **-a**, respectively.

$$\begin{aligned}
 & \boxed{1} \\
 & \text{if } m \text{ even } n = (m^2 + 4m + 8)/4 = (m + 2 + 2i)(m + 2 - 2i)/4 \\
 & \quad b = (m + 2)/2 \\
 & \quad a = -(m^2 - 8)/4 = -(m + 2\sqrt{2})(m - 2\sqrt{2})/4 \\
 & \text{if } m \text{ odd } n = (m^2 + 4m + 7)/4 = (m + 2 + \sqrt{3}i)(m + 2 - \sqrt{3}i)/4 \\
 & \quad b = (m + 1)/2 \\
 & \quad a = -(m^2 - 8)/4 = -(m - 1 + 2\sqrt{2})(m - 1 - 2\sqrt{2})/4
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{2} \\
 & \text{if } m \text{ even } n = (m^2 + 6m + 4)/4 = (m + 3 + \sqrt{5})(m + 3 - \sqrt{5})/4 \\
 & \quad b = (m + 3)/2 \\
 & \quad a = -(m^2 - 2m - 4)/4 = -(m - 1 + \sqrt{5})(m - 1 - \sqrt{5})/4 \\
 & \text{if } m \text{ odd } n = (m^2 + 6m + 5)/4 = (m + 5)(m + 1)/4 \\
 & \quad b = (m + 2)/2 \\
 & \quad a = -(m^2 - 5)/4 = -(m + \sqrt{5})(m - \sqrt{5})/4
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{3} \\
 & n = (m^2 + m + 4)/2 = (m + 1 + \sqrt{15}i)(m + 1 - \sqrt{15}i)/4 \\
 & b = m \\
 & a = (m^2 - m - 4)/2 = -(m - 1 + \sqrt{17})(m - 1 - \sqrt{17})/4
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{4} \\
 & \text{if } m \text{ even } n = (m^2 + 2m)/2 = (m+2)m/2 \\
 & \quad b = m + 1 \\
 & \quad a = -m^2/2 = -mm/2 \\
 & \text{if } m \text{ odd } n = (m^2 + 2m - 1)/2 = (m + 1 + \sqrt{2})(m + 1 - \sqrt{2})/2 \\
 & \quad b = m \\
 & \quad a = -(m^2 + 2m + 1)/2 = -(m + 1)^2/2
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{5} \\
 & \text{if } m \text{ even } n = (m^2 + 2m + 2)/2 = (m + 1 + i)(m + 1 - i) \\
 & \quad b = m + 1 \\
 & \quad a = -(m^2 + 2)/2 = -(m + \sqrt{2}i)(m - \sqrt{2}i) \\
 & \text{if } m \text{ odd } n = (m^2 + 2m + 1)/2 = (m + 1)^2/2 \\
 & \quad b = m \\
 & \quad a = -(m^2 - 2m - 1)/2 = -(m - 1 + \sqrt{2})(m - 1 - \sqrt{2})/2
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{6} \\
 & n = (m^2 + 3m - 2)/2 = (m + 3 + \sqrt{17})(m + 3 - \sqrt{17})/4 \\
 & b = m + 1 \\
 & a = -(m^2 - m + 2)/2 = -(m - 1 + \sqrt{7}i)(m - 1 - \sqrt{7}i)/4
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{7} \\
 & \text{if } m \text{ even } n = (3m^2 + 2m - 4)/4 \\
 & \quad b = (3m - 2)/2 \\
 & \quad a = -(3m^2 - 2m + 4)/4 \\
 & \text{if } m \text{ odd } n = (3m^2 + 2)/4 \\
 & \quad b = (3m + 3)/2 \\
 & \quad a = -(3m^2 - 1)/4
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{8} \\
 & n = (m^2 - m - 1) = (m - 1 + \sqrt{5})(m - 1 - \sqrt{5})/4 \\
 & b = (m - 1)/2 \\
 & a = -(m^2 - m + 1) = -(m - 1 + \sqrt{3}i)(m - 1 - \sqrt{3}i)/4
 \end{aligned}$$

$$\begin{aligned}
 & \boxed{9} \\
 & n = (m^2 - m + 1) = (m - 1 + \sqrt{3}i)(m - 1 - \sqrt{3}i)/4 \\
 & b = m + 1 \\
 & a = -(m^2 - m - 1) = -(m - 1 + \sqrt{5})(m - 1 - \sqrt{5})/4
 \end{aligned}$$